



DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

DANIEL STALEY
DIRECTOR

June 28, 2017

To: North Carolina Clinicians and Laboratories
From: Zack Moore, MD, MPH, State Epidemiologist
Scott Zimmerman, DrPH, MPH, HCLD (ABB), Director, NC State Laboratory of Public Health

Subject: Antibiotic resistant infections in North Carolina

This memo is intended to provide information to North Carolina healthcare providers and laboratories regarding an increase in infections caused by multi-drug resistant organisms (MDROs) and recent detection of unusual drug-resistant bacteria in North Carolina. Clinicians and laboratories should consider this information when evaluating laboratory results indicating an organism that demonstrates resistance to carbapenem antibiotics.

Background:

Enterobacteriaceae are a normal part of the gastrointestinal flora and include *Klebsiella* species, *E. coli* and many other types of bacteria. Carbapenem-resistant Enterobacteriaceae (CRE) are Enterobacteriaceae that have become resistant to carbapenem antibiotics. Some CRE produce enzymes called carbapenemases, which break down carbapenem antibiotics. The genes that produce these carbapenemases can then be transferred to other bacteria. Because of this ability to transfer resistance to other bacteria, carbapenemase-producing CRE (CP-CRE) are of particular concern. Carbapenemases include: *Klebsiella pneumoniae* carbapenemase (KPC), New Delhi metallo- β -lactamase (NDM), Verona integron encoded metallo- β -lactamase (VIM), imipenemase metallo- β -lactamase (IMP), and oxacillinase-48 (OXA-48).

Current Situation:

Recently, the North Carolina Division of Public Health (NC DPH) has been assisting local public health officials in investigating an increase in MDRO infections in the eastern part of the state. Through this investigation, three patients have been identified as being infected or colonized with CP-CRE producing the IMP carbapenemase. CP-CRE producing IMP are rarely identified in the US and had not previously been identified in NC. Extensive screening has not identified any additional cases.

The NC Division of Public Health (DPH), in collaboration with state and local partners and the Centers of Disease Control and Prevention (CDC), is actively providing education, assessing infection prevention practices and monitoring compliance with control measures at impacted facilities.

Recommendations:

In light of the increase in CRE nationally and globally and recent identification of CP-CRE producing IMP

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in North Carolina, NC DPH asks that clinicians and laboratories consider the following recommendations.

Surveillance and Notification

- Communicate with your laboratory to ensure use of appropriate methods for CRE identification and to assess the capacity of your laboratory to test for production of carbapenemase. If your laboratory does not have the capacity to perform carbapenemase testing, consider identifying an alternate laboratory to perform additional testing when needed.
- Perform periodic reviews of laboratory data to quantify incidence of CRE and detect changes in overall trends.
- **If you or your facility identifies a cluster of patients with CRE infection or colonization OR suspect an unusual mechanism of resistance, please notify your local health department and save the isolate.**

Prevention

- Implement a system to facilitate timely notification of infection prevention staff when CRE are identified.
- Place patients colonized or infected with MDROs in Contact Precautions when appropriate.
- Minimize the use of invasive devices.
- Educate healthcare personnel on prevention of CRE transmission.
- Notify transferring agencies and facilities if an individual is infected or colonized with CRE or another MDRO.
- Adopt a policy on Antimicrobial Stewardship, to include CDC's seven core elements of stewardship. Detailed description of these core elements is available at <http://www.cdc.gov/getsmart/healthcare/pdfs/core-elements.pdf>

Additional information on CRE and infection prevention of multi-drug resistant organisms can be found at:

https://www.cdc.gov/hicpac/pdf/MDRO/Pages28_33MDROGuideline2006.pdf

<https://www.cdc.gov/hai/pdfs/cre/CRE-guidance-508.pdf>

If you have questions, please call the NC DPH epidemiologist on call at 919-733-3419.

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